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     FILE 'CAPLUS, BIOSIS, USPATFULL, WPIDS, AGRICOLA' ENTERED AT 09:17:20 ON
     07 JUN 2002
L5         10906 S XYLANASE?
L6         80500 S LECITHIN? OR LYSOLECITHIN?
L7            84 S L5 AND L6
L8            16 S L5 (P) L6
L9            15 DUP REM L8 (1 DUPLICATE REMOVED)
L10       107058 S CEREAL?
L11          477 S L5 AND L10
L12          202 S L5 (P) L10
L13         2821 S L6 AND L10
L14           32 S L7 AND L10
L15           31 DUP REM L14 (1 DUPLICATE REMOVED)

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WEST

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L3: Entry 3 of 4 File: DWPI Aug 30, 1984

DERWENT-ACC-NO: 1984-220427
DERWENT-WEEK: 198436

TITLE: Hemicellulose prodn. for use in foodstuffs - involves alkalising cellulose liquor obtd. in viscose prodn.

INVENTOR: BAUER, J; LENZ, J ; RUF, H ; WUTZEL, H

PATENT-ASSIGNEE: CHEMIEFASER LENZING AG (CHES)

PRIORITY-DATA: 1983AT-0000644 (February 24, 1983)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
DE 3405208 A	August 30, 1984		017	
AT 8300644 A	September 15, 1984		000	

APPLICATION-DATA:

PUB-NO	APPL-DATE	APPL-NO	DESCRIPTOR
DE 3405208A	February 14, 1984	1984DE-3405208	

INT-CL (IPC): A21D 2/36; A21D 13/04; A23L 1/30; C08B 37/14

ABSTRACTED-PUB-NO: DE 3405208A
BASIC-ABSTRACT:

Water-binding agent based on hemicellulose (I) is prepd. by (i) subjecting alkalising liquor to ultrafiltration to (I) content 90-140 g/l.; (ii) pptn. of (I) with mixt. of aliphatic alcohols and centrifuging; (iii) washing centrifuged ppt. with mixt. of aliphatic alcohols to remove NaOH; (iv) treating ppt. successively with HCl, H2O2, and Mg(OH2 or Mg salts and (v) sepg., drying, and emitting the (I).

In (iv) ppt. is treated as approx. 10% suspension in aq. MgOH contg. at least 60% MeOH.

USE/ADVANTAGE - Water-binding or viscosity-increasing agent, partic. for foodstuffs, esp. bakery goods, 5-50% solid components of dough being replaced by (I). In prepn. of wheat flour-based confectionery. (I) with more than 90% having particle size under 60 microns and with 70-75% reflectance is used, and pref. a starch-degrading enzyme and/or emulsifier based on discetyltortaric acid and lecithin is incorporated 4.5 pts.wt. (I) are used in place of 1 pt.wt. starch in water-contg. foodstuffs. (I) is obtd. from viscose prodn., reducing pollution caused by disposed in waste water, is obtd. cheaply, is odourless, tasteless, remains white on heating, but is not digested.

ABSTRACTED-PUB-NO: DE 3405208A
EQUIVALENT-ABSTRACTS:

WEST

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L3: Entry 1 of 4 File: EPAB Aug 30, 1984

PUB-NO: DE003405208A1
DOCUMENT-IDENTIFIER: DE 3405208 A1
TITLE: Process for the preparation of a water-binding agent based on hemicellulose, and the use of the agent

PUBN-DATE: August 30, 1984

INVENTOR-INFORMATION:

NAME	COUNTRY
LENZ, JUERGEN DIPL CHEM DR	AT
RUEF, HARTMUT DIPL ING	AT
BAUER, JOSEF	AT
WUTZEL, HERBERT	AT
DIPL-ING, KLOSTERNEUBURG	AT

ASSIGNEE-INFORMATION:

NAME	COUNTRY
CHEMIEFASER LENZING AG	AT

APPL-NO: DE03405208
APPL-DATE: February 14, 1984

PRIORITY-DATA: AT00064483A (February 24, 1983)

US-CL-CURRENT: 426/653; 426/660
INT-CL (IPC): C08B 37/14; A21D 13/04; A21D 13/08; A23L 1/30
EUR-CL (EPC): A21D002/18; C08B009/00, C08B037/14 , A23L001/308

ABSTRACT:

In the process, hemicellulose is precipitated, using aliphatic alcohols, from the wood pulp alkalinisation liquor produced in the preparation of viscose.

In order to obtain the technical-grade hemicelluloses, which are precipitated first, in readily separable form and to obtain these environmentally polluting hemicelluloses present in the hitherto virtually unusable alkalinisation liquors from a viscose fibre factory, in very pure form without expending a considerable amount of time and money, the following combination of measures is carried out: a) the alkalinisation liquor is concentrated to a hemicellulose content of from 90 to 140 g/l by ultrafiltration, b) the hemicellulose is precipitated from the concentrated alkalinisation liquor by means of a mixture of aliphatic alcohols and is centrifuged off, c) the centrifuged-off precipitate is washed at least once with a mixture of aliphatic alcohols in order to remove excess sodium hydroxide solution, d) the precipitate which has been pre-purified in this way is then treated successively with hydrochloric acid, hydrogen peroxide and magnesium hydroxide or magnesium salts, and e) finally the hemicellulose is separated off, dried and ground.

The pure process product is suitably and usefully used as a water-binding or viscosity-increasing agent, preferably in foodstuff technology, for the production of high-fibre, reduced-calorie bakery products.

Research Results

93/120-05
Fish Meal Replacement in Aquaculture Feeds for Atlantic Salmon

Objectives

1. To obtain a range of enzyme and feed supplements for use in Atlantic salmon feeds
2. To establish an effective experimental protocol for measuring the food consumption and growth and calculating growth efficiency of Atlantic salmon
3. To establish an effective *in vivo* digestibility method
4. To determine the effectiveness of enzyme supplements and feed components in improving the growth and growth efficiency of Atlantic salmon
5. To determine the effectiveness of feed supplements and feed components in improving the growth and growth efficiency of Atlantic salmon
6. To establish whether improvements in digestibility due to enzyme and feed supplements are translated into improvements in growth efficiency
7. To establish whether *in vitro* digestibility data can be used to screen and select feed components and suitable combinations of enzyme and feed supplements for inclusion in Atlantic salmon feeds

Non Technical Summary

If aquaculture is to continue to expand in Australia cost-effective diets based on Australian agricultural ingredients urgently need to be developed. The replacement of fish meal as the protein source of choice is a global research priority driven by a declining supply of fish meal and rapidly expanding aquaculture and aquaculture feed industries. This report describes the progress achieved with Atlantic salmon to develop suitable methods, replace fish meal with plant meals and to trial additives for increasing nutrient utilisation.

Methods

Atlantic salmon can be difficult to maintain and grow quickly in experimental systems and procedures were successfully established and used in this project and are now available for future research. Feed intake was accurately measured in all experiments either using settlement traps or by satiation feeding and provided vital information on the efficiency of dry matter and nutrient gain. A standard *in vivo* digestibility method was developed and used successfully during the project to measure apparent digestibility of a variety of nutrients in feeds and ingredients. To investigate more rapid methods for predicting utilisation the *in vitro* digestibility of was investigated for dry matter and nitrogen using a multi-enzyme procedure. Enzyme preparations were either made from commercially available enzymes or from extracts of the pylorus of salmon. The ingredient digestibility showed a range of values that were lower for dry matter than for crude protein. There were differences between the different enzyme systems and the wider range of values from the salmon enzyme system suggested greater sensitivity compared to the commercial enzyme system. There were significant correlations between *in vivo* and *in vitro* digestibility values for the ingredients and showed potential of the method.

Fish meal replacement

Experiments were conducted to investigate the potential of soybean meal, pea protein concentrate and lupin protein concentrate to replace fish meal protein. The plant protein meals added to replace 40% of the protein from fish meal resulted in weight gains that were within 10% of the growth achieved by salmon fed fish meal only diets. This showed the potential of each of these plant meals to be used in salmon feeds and was further tested by

replacing 25 and 33% of the fish meal protein in extruded feeds. The parameters used to extrude the feeds were controlled in order to ensure the experimental feeds matched the commercial salmon feeds produced in Australia. The growth on each of the plant proteins and at both inclusion levels was the same as the control, fish meal only, diet. In a final trial, in which salmon were held under commercial conditions of high stocking density and high feed rates, the performance of pea meal and soybean meal in extruded feeds was equal to that of a fish meal only control diet as well as a commercial feed formulation. The soybean, lupin and, especially, pea meals were shown to have considerable potential as replacements for fish meal protein in Atlantic salmon feeds.

Nutritional adaptation was shown to be of great importance in assessing the performance of novel feeds. A diet in which 50% of the protein was replaced with pea meal resulted in decreased feed intake. This was most dramatic on the second day of feeding when it fell to 50% of the intake on the control feed. However, feed intake increased and after 12 days had returned to the previous level. Adaptation of digestive physiology was more rapid and stabilisation of digestibility occurred over four days. Salmon were shown to adapt to the pea meal based diet and ate more and grew faster than the fish on the control diet. Furthermore, when feed intake was matched between two treatments the salmon that had adapted to a pea meal diet grew faster and more efficiently than salmon switched to the diet for the first time. These results have great significance in the organisation of trials for assessing novel feed ingredients. The experiments further demonstrated the importance of pea meal and the ability of salmon to adapt behaviourally and physiologically to plant meals.

Feed additives

Commercially available supplements aimed to improve nutrient digestibility using supplementary enzymes or fat utilisation in high fat were tested. Phytase had significant effects on digestibility of major nutrients and on growth and when added to an extruded diet containing soybean (33 % protein) the growth response was greater than that on the control diet and equal to that of a diet containing fish meal as the only protein source. Experiments demonstrated that phytase improved the performance of feeds when fed to salmon and its most important functions were related to improvements in phosphorous utilisation and stimulation of appetite so that feed intake and therefore growth increased. Other enzyme supplements (proteases and carbohydrases) had no effect on fish performance. The potential of readily available additives, lecithin products (Aquagran; Nutrpur S; Lecisoy N-2; Emulbesto 100A; Emulbesto 100E) and products containing betaine (Finnstim; Betafin BCR), which have been linked to improved fat utilisation by fish was investigated and smaller (88 g) and larger (161 g) salmon. Lecithin had no significant effect on final body weight or wet weight gain of the smaller salmon. Growth performance of the neither the smaller or larger salmon was influenced by the inclusion of betaine, at three different concentrations (0.3, 1.0 and 1.5 %).

Conclusions

High quality feeds manufactured in Australia are available for Atlantic salmon. This meant that the choice of feed supplements with ingredients had to be very specific in order to have an impact on their potential use in future commercial feeds. Modern extruded salmon diets require ingredients that have very high protein contents (identified as at least 50%) and this meant that only processed plant meals could be considered. Meals and protein concentrates made from soybean, lupin and pea were selected and shown to have considerable potential to replace a large fraction of fish meal in salmon diets. Phytase had the most potential for use with plant proteins and it improved growth as well as phosphorous and nitrogen utilisation. The project successfully identified suitable plant meals to be used in combination with a feed enzyme in future commercial salmon feeds.

Project Contact

Project number: 93/120-05

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The project contact details were current at the time of upload, but are not maintained on a regular basis. If you encounter any problems contacting the Principal Investigator, **please contact the FRDC.**

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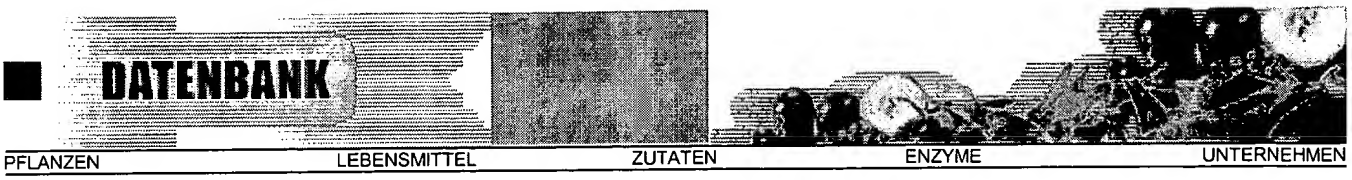

Backmischungen

Erläuterung zum Produkt

▶ Für Brot- und Backwaren werden in den Bäckereien zunehmend **Backmittel und Backgrundstoffe** verwendet, die nicht nur aus Mehl bestehen, sondern je nach Produkt aus einer Vielzahl von Zusatz- und Hilfsstoffen. Diese brauchen in der Regel nicht deklariert zu werden. Auf Nachfrage halten viele Bäcker Informationen über einzelne Inhaltsstoffe der verwendeten Backmittel bereit.

▶ Im Einzelhandel wird ein breites Sortiment von fertigen **Backmischungen** angeboten, mit denen Teige für Kuchen, Gebäck, Brot oder Pizza angerührt werden können.

Mögliche Anwendung der Gentechnik

Backmischungen, -mittel und -grundstoffe können verschiedene Zutaten, Zusatz- und Hilfsstoffe enthalten, bei denen gentechnische Anwendungen möglich sind.

- ▶ Mehl oder Sojamehl
- ▶ Glukosesirup und andere Produkte aus der Stärkeverzuckerung (z.B. Maltodextrine)
- ▶ Sojaprotein oder Pflanzeneiweißerzeugnis, Molkenpulver oder Milcheiweiß
- ▶ Backfett (pflanzliche Fette und Öle)
- ▶ Stärke und modifizierte Stärken
- ▶ Emulgatoren wie Lecithin, Mono- und Diglyceride
- ▶ Enzyme, vor allem Amylasen, Hemicellulasen, Xylanase, auch Proteasen. Die Verwendung von Enzymen variiert nach Getreideart, Produkt (Brot, Dauerbackwaren, Waffeln) und Backverfahren.
- ▶ Mehlbehandlungsmittel: Ascorbinsäure, Cystein, Cystin
- ▶ verschiedene Zusatzstoffe und Aromen

Weitere Informationen

- ▶ Stärkeverzuckerung
- ▶ Übersicht: Enzyme

- ▶ extern: Backmittelinstitut

Mail an TransGen, *6. August 2001*